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ITHACA, NEW YORK
March 15, 1934
VOL. III FASC. V

GENTES HERBARUM

Art. 5. Eubati Boreales

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GENTES HERBARUM

Occasional Papers on the Kinds of Plants

By L. H. BAILEY

5. Certain Northern Blackberries

Published
(Mailed at Ithaca Post Office to regular list)
March 15, 1934

FIG. 133. PRIMOCANE FOLIAGE of *Rubus setosus* from Bigelow's original region (× ½).

Exch.
L. H. Bailey
3-19-1934

ARTICLE 5. CERTAIN NORTHERN BLACKBERRIES

In my last Rubus paper, Eubati Australes, published August 26th of last year, it was said that the accumulations and experiences of the season had made possible complete new studies of a number of the doubtful groups both south and north, but that then only the southern part of the problem was attempted. Herewith, therefore, is the northern part of the year's harvest, Eubati Boreales, representing illuminating collections of 1933. I trust we are gradually bringing order out of the wild confusion of our native blackberries; and some day someone will assemble a monograph.

In 1933 I collected Rubus from northwestern Florida and southern Louisiana to Mt. Desert in Maine. Important materials have come from Missouri, in collections by B. F. Bush and J. H. Kellogg and the herbarium set of the University of Missouri. The large collections of Cornell University have been submitted for study.

Careful collecting in a limited area, season by season, is likely to yield surprising results in the native blackberries. Most of the collecting through the years has been random, or merely incidental to other botanizing; therefore, it has not been critical and has not greatly elucidated the Rubus problem. Three notable examples of localized collecting are those of Blanchard in York County, southwestern Maine, in southern Hartford County, Connecticut, and at his home in southeastern Vermont and adjacent New Hampshire. So many were the novelties described from these explorations in early settled parts of the country (where of course all things had been discovered) that Blanchard's work was discredited and it was supposed he found only local forms which he named as species. Yet Blanchard knew his blackberries, as time has demonstrated. Or, fantastic theories were devised to account for so many species in such unpromising areas. In his day few pickings had been made. Not every locality can yield such harvests; yet undoubtedly there are many districts where notable results can still be obtained, and they are not necessarily in the newer and supposedly fresher parts of the country.

Southeastern Connecticut would not be accounted a tempting region for new findings in Rubus inasmuch as the country has long been settled and all records made; yet my correspondent, K. P. Jansson, exploring in New London County and adjacent Rhode Island and on an eastern islet of New York in Long Island Sound, has turned up the new species *R. novanglicus, facetus, Janssonii* and now *honorus;* and his No. 73 of 1931 is the type of *R. insons* although I had had the plant from elsewhere. Moreover,

I have in the herbarium from him a good number of things I cannot yet name; of his sendings of 1933 I have had to pass up twenty-five per cent not counting the new *honorus*. His excursions have also yielded important extension of ranges. Last year, for example, he found *Rubus Grimesii* in southeastern Connecticut, known heretofore only at the original station near old Williamsburg in southeastern Virginia; this probably means that the plant has general dispersion in the coastal country.

One may not be clear, from a single collecting of a novel blackberry, whether the plant is a new species, local hybrid, mutation, or other unaccountable variation. It is my practice in cases of doubt, even though the plant may appear very distinct, to place it in a cover under number or provisional name until such time as others of its kind may assemble themselves. Many of my new species have grown into recognition in this way, and there are many covers in the herbarium which have not yet proved themselves; in fact, practically all unnamable material is allowed to rest in this fashion, until other specimens disclose the identity. Some of these covers have been waiting for years.

We shall not understand the real relationships of the many elements in Eubatus until the units are recognized and named, and orderly field studies are undertaken in different places.

Reduction of nomenclature in the blackberries

Some of my friends seem to be alarmed by the number of blackberries appearing in these publications. I see no reason, however, why we should be disturbed by the attempt to understand blackberries any more than hawthorns, dogbanes, oaks, phloxes, pondweeds, sedges, or willows. Naturally, I cannot forecast an end to the enterprise, for that end is not in my time. Rubus is now the outstanding example of a genus in North America that has been passed by. Only Blanchard has really undertaken it as a particular field problem, and his equipment for such work was limited. Before his time the group had been practically undisturbed for a hundred years. I should not be shocked if eventually we recognized all the species there are.

Up to the present paper, 100 species of blackberries have been regularly recognized in North America. Some dozen or score years ago more than 200 hybrids had been accounted in the same territory, with compound names, practically all of which are without real evidence. They are mostly result of attempts to make out the Eubati from herbarium sheets, and such sheets are known to be notoriously inadequate even for identification of recognized species let alone of mixtures. It has been a favorite practice, for example, to postulate hybrids with *R. argutus*, but I have not found any one who knows what *argutus* is; only in very recent time, at all events, have we had any approximately clear conception of the species. Recently I have

devoted several months to an intensive study of native Vitis; I find the blackberries as understandable as the grapes.

It is a magic assumption that we have understood wild blackberries so well that we could postulate more than thrice as many hybrids as species. Rydberg recognized 41 species and 158 hybrids north of Mexico, Brainerd 12 species in New England and 46 hybrids or suspected hybrids. Recent attacks on the genus have rescued many of these supposed hybrids (including mine), finding definable characters in them of their own, and consistent ranges or persistent habitats; such plants certainly cannot be contemporaneous crosses. We are questioning the validity of the customary assumptions.

If there are many more hybrids than species in any genus, then specific lines essentially break down and identification of wild plants is hopeless. Confusion is practically complete. We are faced with alternatives: giving up systematology of the genus, or recognizing species.

We have been so little trained in Eubatus by the manuals, and statements otherwise are likely to be so controversial, that there is no body of opinion behind the group in this country. Added to this limitation is the unfortunate fact that much of the herbarium material is made up of fragments that cannot represent the plant, with perhaps complete absence of notes on habit or even whether the berry was highbush or a trailing tip-rooter.

In no other great group has there been such unchecked supposition of natural hybridity as in Eubatus, save possibly in Vitis; this is a measure of the difficulty of the genus. Strange futility has followed it. When we have recognized the natural units we shall come again to the question of hybrids as a taxonomic problem; but this time is yet much ahead of us in North America.

The process of recognizing species (on standard evidence and practice) is a means of clarifying the blackberries. The units can then be classified and keyed. It is not a question of acknowledging too many units but of making them understandable, whatever may have been their ultimate origins. Already we have reduced the names by more than one-half, have simplified the nomenclature, and have made it possible to identify the things as far as yet known (when adequate specimens are in hand). Trouble is, we have not known the plants.

Setosus; and the Case of Untypical Type Specimens

In a swamp at Sudbury, twenty miles from Boston, Jacob Bigelow found a blackberry which in 1824 he published as *Rubus setosus*. Until near the close of the century it remained practically an unacknowledged plant, although it was early accepted by Amos Eaton and by Beck. It was not

recognized by Torrey in his Compendium, 1826, although Bigelow had sent him a specimen under date June 17, 1823, as the Torrey correspondence discloses. In the original Manual, 1848, Gray made it a synonym of *R. hispidus*, where it lay until the sixth edition by Watson and Coulter in 1890 when the name was removed altogether. It was restored to full standing as a species in the current edition by Robinson and Fernald, 1908. In the first edition of Britton and Brown's Illustrated Flora, 1897, it is admitted to specific rank; it is so retained in Britton's Manual, 1901, but divided into *R. setosus* proper and a new species *R. nigricans*, Rydb. In the current edition of the Illustrated Flora, 1913, only *R. nigricans* is retained, with the following note: "Included in our first edition under *Rubus setosus* Bigel., which appears to be a hybrid between this species and *R. hispidus* L." In North American Flora, volume 22, part 5, December 23, 1913, *R. setosus* is restored and *R. nigricans* also retained.

Now enters Blanchard, tireless field collector; note Rhodora, November, 1906:

"Dr. Rydberg's *R. nigricans* is a synonym for this species and the injection of this name has tended to make confusion. There are extant three very meagre specimens sent out by Dr. Bigelow evidently taken from the same plant which he says grew in a swamp in Sudbury, Mass. Dr. Rydberg assumes that these three specimens belong to a species distinct from the great mass of what is known as *R. setosus* which he by this process makes nameless and proceeds to name. The writer in August, 1906, gathered this species from about a dozen stations in Sudbury each different from the others and varying as much or more from each other as they do from Dr. Bigelow's. This species is variable but the variations are not deep. If these slight variations are to be considered as specific there is no end to the species that can be made from them. His specimens and his description will probably satisfy botanists, acquainted with this species in its haunts, that this plant may properly still be known as *R. setosus* Bigelow."

Blanchard's reference to the "three very meagre specimens sent out by Dr. Bigelow" is explained by me in Gentes Herbarum, i, 255, 1925: "Three small pieces of *R. setosus* from Bigelow are extant in this country, on two sheets in Hb. Torrey, collected in Sudbury; the sheet with two specimens is shown in Gent. Herb. Fig. 80, and the third specimen does not differ. Another specimen is in the Candollean Herbarium at Geneva, where it has been photographed by Fernald; it was sent to A. P. De Candolle by Bigelow, and De Candolle described the plant in the Prodromus, accrediting it to 'Bigelow in litt.' The specimen is singularly like those in the Torrey Herbarium".

[The sheet with two specimens shown in Fig. 80, Gentes Herbarum, 1, apparently was not sent directly to Torrey by Bigelow for the label says, "Received from Bigelow in answer to Dr. Gray's request, April, 1840"

but the specimen had probably been taken at the same time as the others inasmuch as it matches them so precisely and is in the same stage of immaturity. One of these pieces bears a bit of floricane with remaining old setæ that correspond with those we now know as characteristic of *setosus.*]

I have not been able to find Blanchard's specimens of *R. setosus* taken in August, 1906, "from about a dozen stations in Sudbury," but in my turn I also have visited the low lands at Sudbury, first in 1932 under guidance of C. A. Weatherby and at another point in 1933 with my daughter, once meeting the plants in bloom and again in young fruit. Apparently the findings of Blanchard did not precisely match the imperfect specimens of Bigelow; neither was I able to duplicate them precisely at Sudbury; but both of us were satisfied with the identification. Like Blanchard's, my specimens vary "as much or more from each other as they do from Dr. Bigelow's." The specimens of Bigelow are weak little flowering pieces, probably from some shady or crowded place, and "apparently the flowers had wilted when the specimens were put in press" (Gent. Herb. i, 255). "I can almost match them in my own herbarium" from other places.

We are not to overlook Bigelow's statement that *R. setosus* had been "received also from Dr. Payne, Montreal." The species is widespread in Province Quebec.

This, now, raises the question of lack of agreement between Bigelow's text and the plant fragments he left us; these disagreements were explained in 1932 in Gentes Herbarum ii, 358. One cannot verify his diagnosis by means of his specimens, and therefore the specimens do not typify the species: they are not type specimens in the modern usage. With *setosus* in mind I wrote in my last Rubus paper (Gent. Herb. iii, 121): "It is to be remembered that specimens left by early botanists may not be 'types' in the sense in which we understand them in the present day."

Therefore, I draw my conception of *Rubus setosus* from Bigelow's printed account, which is full, rather than from his specimens, unless discoveries are made that we do not now anticipate; and if we had no specimens from him we should still accept his species. Yet it is good to know that *Rubus setosus* still thrives at the "meadows" or marshes of Sudbury.

Systematists must always be on guard against old specimens that we moderns call "types." The early botanists knew little about "types" as we require them in these more particular days; probably they conceived of herbarium specimens rather as representatives of the species they had made, and they may not have been in hand when the diagnosis was drawn. Often species were not founded on specimens. Particular localities may not accompany old specimens, to enable one to correlate them with descriptions. That is, the validity of the specimen as a verification of the description is always to be considered.

There are many cases of disagreement between an author's diagnosis and his specimen. Thus Linnæus' specimen of the American blackcap raspberry, *Rubus occidentalis*, written in his own hand, is a European blackberry, *R. cæsius*. This case is considered as follows in Gentes Herbarum, i, 147 (1923):

"Of *Rubus occidentalis* in the Linnean Herbarium there are two sheets. One is our blackcap raspberry, collected by Kalm; Linnæus apparently described the species from Kalm's material, but the sheet does not bear his handwriting; on the sheet, J. F. Smith has written 'occidentalis verus H(erb.) B(anksianus).' The other sheet is written '2 occidentalis,' in Linnæus' hand, the figure 2 being the entry in Species Plantarum; the plant is not the blackcap, however; on the sheet Smith has written 'saxatilis Pursh? or obovalis?,' and A. G(ray) has written 'an caesius?' It appears that Linnæus wrote up the wrong sheet; but the Kalm plant and the original citation and description may be held to represent the species he intended."

The case of *Rubus occidentalis* is simple of interpretation but many others are complicated or dubious. In North American Rubus the special difficulties are with specimens representing species early made in publications abroad (note Gent. Herb. iii, 121), cases in which diagnoses are naturally insufficient for present day service and nativities only general so that type localities cannot be visited. If specimens of *R. setosus*, with a special habitat behind them, are insufficient to serve as types, it is easy to understand why less definite material in many genera often must be interpreted with reservations.

We may now return to the plant *setosus* in the low lands at Sudbury. The recent collections enable us for the first time to know the primocanes of the plant Bigelow apparently had in hand. The primocane foliage was remarkably uniform in the many plants I saw at Sudbury although the flowering parts showed wide differences. A primocane from Sudbury is shown in Fig. 133. It is like that in Fig. 164 of volume ii (p. 357, 1932) made from a Blanchard specimen collected in southwestern Maine. Considerable variation in primocane leaflets is evident in the wide distribution of *R. setosus*, since it is a major species in our Rubus flora, most of the departures being narrower rather than broader; I have not been able to correlate these differences with other dependable characters or relate them to given ranges. Departure in the direction of greater width and more abrupt apex, as far as I have seen them, are associated with a region: therefore var. *rotundior* (Gent. Herb. ii, 358) from Wisconsin, represented in Fig. 134. (One must take care not to confound with broad-leaved *setosus* the leaves of *R. hispidus* var. *major* which is a running tip-rooting plant.)

Prime reason for neglect of *Rubus setosus* is the fact that we have been afraid to remove various plants that do not belong to it. Blanchard started the break-away by separating *R. vermontanus* 1904, *R. junceus* and *peculiaris* (*miscix*) 1906, *R. semisetosus* and *ascendens* 1907; thus the situation lay until *R. Wheeleri* was removed in 1932; and the end is not yet, as we shall see. I cannot resist the temptation to publish herewith (Fig. 135)

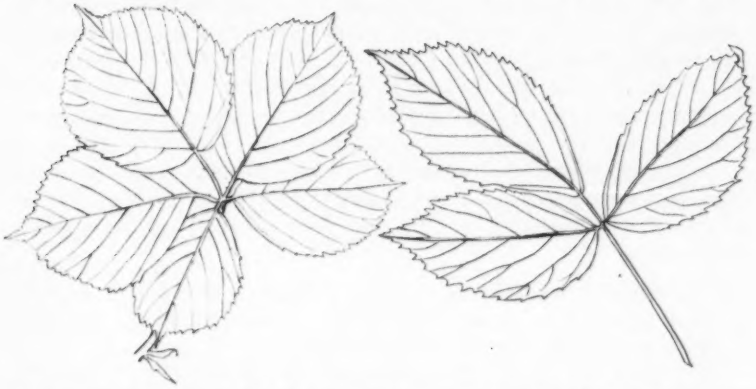

FIG. 134. PRIMOCANE LEAF of *Rubus setosus* var. *rotundior*, left, and of *R. semisetosus* var. *ortivus* (× ½).

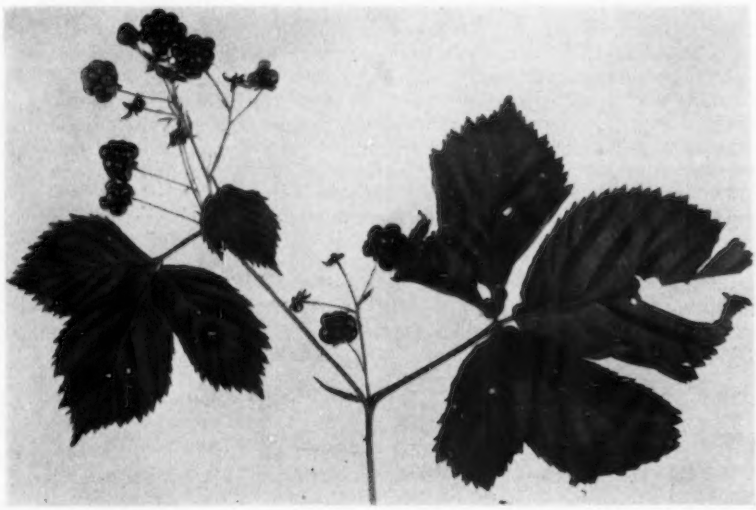

FIG. 135. FRUITING SPRAY of *Rubus Wheeleri* (× ⅖).

a beautiful picture of *R. Wheeleri* in fruit sent me this last year by Dr. Ernst A. Bessey and made by Professor F. C. Strong, particularly as the Setosi are not often pictured in fruit. In 1932 the plant was photographed for me in bloom (Gent. Herb. ii, 457) and I had also photographed it at the type station.

Another reason for the misunderstanding of *setosus* has been too exclusive attention to herbarium specimens. This limitation did not apply to Blanchard. For some years I could not understand the *setosus* segregates even though I thought I had ample material; but now that I have pursued them all in the field they become clear and fascinating. This does not mean that all the difficulties disappear, and one need not fear such disaster in Rubus.

A clarifying segregation in the Setosi was the founding of *R. semisetosus* by Blanchard. I have now followed this species in two years on the sandy lands of Connecticut and its relatives elsewhere, with unexpected consequences:

† **R. semisetosus** var. **ortivus,** var. nov. Fig. 134 right.

Minus lignosa quam *R. semisetosus*, erectior, parvis, invalidis, et paene setaceis aculeis, et fere majoribus foliolis floricanorum.

Much softer and less woody plant than *R. semisetosus* and perhaps not specifically connected with it, essentially erect, floricanes not decumbent or only oblique, branches weaker, canes terete, glandless: prickles small and almost setaceous or sometimes very few even on primocanes: floral leaflets prevailingly larger but often proportionally narrower: plant 12-24 inches tall: primocane leaflets 3 or 5, prominently side-veined, ovate- to lanceolate-acuminate, 1½ to nearly 4 inches long and the broadest ones more than one-half as broad, dull and nearly or quite glabrous above, soft-pubescent to the finger underneath, closely and unequally sharp-serrate, petioles and petiolules and midribs weakly armed: floricanes branched and foliaceous, the main cane mostly carrying remains of armature, shoots thinly pubescent but glandless; leaflets 3, or reduced to 1 in the inflorescence, mostly ovate or oval and often pointed, about 2 or 3 inches long: flowers about 1 inch across, 5-8 rather closely placed at top of shoot and perhaps 1 or 2 or 3 others in lower axils, all on slender pubescent more or less spicule-armed and usually gland-bearing pedicels: fruit globular, small, of large drupelets.

Mt. Desert Island, coast of Maine. My attention was called to this plant by four sheets in the herbarium of the New England Botanical Club, labelled *R. semisetosus*, collected long ago by E. L. Rand at Long Pond Meadows, Mt. Desert; last year I received it from those Meadows by the courtesy of Dr. Duncan S. Johnson and his assistant, Mr. Hatch.

Another Blanchard segregate is *R. ascendens*, and this requires comment. Blanchard's conception of this species is inclusive of "many others which cannot be placed with any species yet described:" see Gentes Herbarum,

ii, 362. I visited the type station of *ascendens* in 1926 with W. B. Rossberg who was with Blanchard when he discovered it, along the Quinnipiac River in Connecticut and found it to be erect, extensively gregarious (forming a great colony) and leaves soft-pubescent underneath. In eastern Massachusetts (Wellesley) I have several times visited a colony four rods across either way, on dry flat ground that has the characteristics of *ascendens* but the leaves are only slightly pubescent underneath and are otherwise different; I went again to the original *ascendens* colony in 1933 and found plants with very little pubescence and showing other variation, allowing me to connect the Wellesley and Quinnipiac patches although otherwise the divergencies would appear to be too great. We shall need to redefine *ascendens*, as to stature and otherwise, and shall probably then find it to be of wide distribution; Blanchard states that it occurs "in Southern New England generally", but apparently left no specimens to show its range.

At Sudbury in both visits I found another blackberry that does not accommodate itself in any species yet described, and I have taken it elsewhere. It lacks the obovate leaflets and the glandular semi-setose character of *ascendens*. One or two stray specimens may mean little but when one has ample material representing a natural range, the relationships are obvious. We may now add it to the enlarging *setosus* relationship:

† **Rubus Bigelovianus,** spec. nov. § Setosi-Insetosi. Fig. 136.

Ab insetosis Setosis erecto habitu, invalidis aculeis et rigidis setis differt, pubescens sub foliis, foliola non obovata, pedicelli calyxque eglandulosi.

Outlying member of the Setosus section practically glandless and mostly devoid of setæ on pedicels but associated with that group by the strongly side-veined more or less plicate leaflets soft-pubescent underneath and particularly by the characteristic flower-clusters. Essentially erect or ascending 2-4 feet high, the primocanes upright or somewhat curved, floricanes often lopping with weight or curving over like a black raspberry: primocanes slender and rather soft or not hard-woody, only slightly if at all angled or furrowed when fresh, with either few or many very weak small straight scattered prickles or stout setæ, sometimes slightly hirsutulose but mostly glabrous; primocane leaves dull, soft-pubescent underneath, prominently side-veined, petioles pubescent and sparingly armed and 2-4 inches long; leaflets 5, ovate- to elliptic-acuminate, or with a slight tendency to be somewhat obovate, terminal one $2\frac{1}{2}$-4 inches long and on a stalk 1 inch or less long and one-half or more as broad, lateral leaflets (particularly the lower pair) narrower and small and nearly sessile, margins sharply shallowly doubly serrate, the uppermost leaves on the cane smaller and with narrower members and with a prominent side-ribbed-plicate look: floricanes still carrying armature or remains of it, terete; floricane leaflets 3 or reduced to 1 in the inflorescence, rather small, mostly broadly ovate, dull, pubescent underneath: flowers $\frac{3}{4}$ inch across, 4 to 8 terminating leafy laterals that are

4-6 inches long and usually a few single ones in lower axils, at fruiting time making a somewhat umbel-form cluster with divaricate very thin pedicels of which the lower ones may be 1 inch long and overtop the terminal one, pedicels pubescent and sometimes with a few seta-like prickles and perhaps obscure indication of glands; petals very narrow, well separated; calyx-lobes abruptly short-pointed, not long, reflexing at anthesis: fruit nearly globular, $\frac{1}{2}$ inch across, seedy.

Eastern Massachusetts: Low land, dry at collecting time, bordering marshes at Sudbury, Middlesex County (type locality); dense clump on dry roadside at Bedford, Middlesex County, Massachusetts, and Jamaica Plain, Suffolk County; Wayland, Middlesex County (*Wiegand*); on Long Island, New York.

FIG. 136. FRUITING PART of *Rubus Bigelovianus* ($\times$ $\frac{1}{2}$). It has the *setosus* type of inflorescence; leaves soft-pubescent underneath; pedicels pubescent but glandless and usually devoid of prickles. Erect or upright plant, not tip-rooting.

Frondosus Again

In December, 1932 (Gent. Herb. ii, fasc. vii) I raised the question of the *frondosus* gens, another of the Bigelow units, saying "the field collector soon learns that what we know as *frondosus* is not one thing." So various are the forms passing under the name that no one at present pretends to understand the species. It is simple enough if one has a few pieces that match the diagnosis, but if one wishes to understand the plants of the regions where it grows, trouble at once begins. Two courses may be taken:

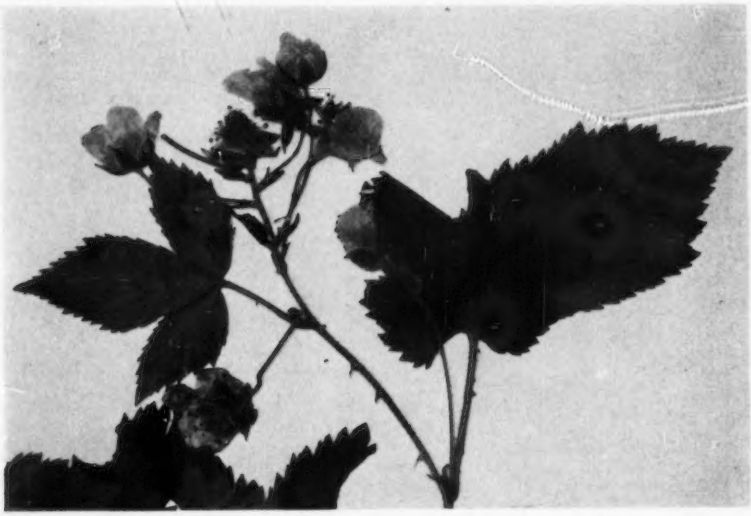

Fig. 137. Flowering habit of *Rubus honorus* (× 1).

enlarge the diagnosis to cover all the plants of the relationship, by which means we practically discard the species and give up the problem; endeavor to separate and name the elements.

The latter course I undertook in 1932. I was surprised to find the problem clarifying itself so readily by this process, but added that my "treatment by no means disposes of the *frondosus* concept. Much exploration is yet required." Now, therefore, I come again to the attack, with additional evidences:

† **Rubus honorus,** spec. nov. § Arguti. Fig. 137.

Debilior quam *R. frondosus*, tenuioribus, minoribus et minus pubescentibus foliis: foliolum primocani terminale, rotundatum vel angustatum ad basin: flores in gracillimis lateralibus, longe pedicellati, in aperta inflorescentia non proxime foliis subtenti, circa 2 cm. in diam.: foliola floralia ovata vel angusta, acuminata.

Glandless plant, branches not tip-rooting, much weaker than *R. frondosus*, more diffuse, with smaller thinner much less pubescent leaves and many soft short horizontal flowering branches: prickles straight and weak, the primocanes angled and not strong: primocane leaflets mostly 5, elliptic to narrow-ovate, gradually acute, narrowed to base or rounded, terminal one not cordate as in *R. frondosus* although perhaps obscurely subcordate, 2-3 inches long and about one-half as broad, margins rather bluntly irregularly serrate, thinly hairy-pubescent on margins and underneath (not felty-pubescent as in *R. frondosus*): flowers scattered or loosely clustered on many virgate closely placed leafy laterals rather than aggregate at the apex of a few stout side branches, slender-pedicelled and not closely subtended by foliage, about 1 inch across and with narrow-obovate blunt petals; calyx-lobes narrow-pointed, erect.

Groton, New London County, Connecticut, *K. P. Jansson* 1933: No. 9 (type), plant 7 feet tall in wet woods; No. 10, from 2-3 feet high covering a dry rocky hill and adjacent pasture, at Eastern Point; No. 16, upright and somewhat arching, about 5 feet high, in moist woods near Poquonnock Lake. Apparently the same plant, but not advanced in bloom, was collected by Jansson in 1930 at Pearl River, Rockland County, southeastern New York; and others. I have seen fragments that appear to be this species from Greene County, Catskill Mountains region, New York, and Huntingdon County, central Pennsylvania. We shall probably find the plant to have rather wide distribution and to bear little real relationship to *R. frondosus*.

The *frondosus* association, so far as now analyzed, resolves itself as follows:

Flowers and fruits few (5-10) on short rather stout pedicels closely subtended by or buried in very broad-ovate coarsely toothed mostly short-pointed leaves or leaflets (Fig. 192, 193, Gent. Herb. ii): floricanes and mature primocanes terete or essentially so or only indifferently angled: leaves thick, densely soft-pubescent underneath, terminal primocane leaflet broad and cordate (Fig. 194, Gent. Herb. ii): berries nearly globular.

R. frondosus, Bigel. Fl. Bost. Ed. 2, 199 (1824). Massachusetts to District of Columbia and adjacent Virginia, and indefinitely westward. West of New York state the plant has a different aspect and may be a separate species.

The plant in the region of Philadelphia to Washington was named *R. philadelphicus* by Blanchard in Torreya, vi, 55 (1907) and it has points of difference although at present referred to *frondosus*.

Flowers and fruits not aggregate among short-broad strongly toothed leaves or leaflets: mature promocanes and usually floricanes furrowed: leaves variously but usually not densely pubescent underneath, the terminal primocane leaflet at most only subcordate and not distinctly broad (narrower than long): berries various.

Clusters cymiform, as broad as long (not counting separate flowers from lower axils), therefore without prominent continuing axis, the central flower or fruit equalled or overtopped by laterals.

Plant upright and somewhat arching, diffuse, not tip-rooting: primocane leaflets not prominently ovate-tapering to long point.

R. honorus, Bailey, page 257. Southeastern Connecticut, southeastern New York, and adjacent regions.

Plant upright-recurving, making long ends that touch the ground and often root like a black raspberry: floral leaflets gradually sharp-pointed, often pendent (Fig. 196, Gent. Herb. ii): primocane leaflets regularly 5, of which the 2 lower ones typically point downward, all gradually taper-acuminate into a slender end (Fig. 196).

R. abactus, Bailey, Gent. Herb. ii, 452 (1932). Frequent in western-central New York, with indications of it in New England and westward to Minnesota and Missouri; probably a widespread major species.

Clusters racemiform, longer than broad and with a continuing central axis and more or less divaricate pedicels.

Blossoms large, upwards of 1 inch across, in a loose open cluster on prominent pedicels (Fig. 195, Gent. Herb. ii): primocane leaves soft and averaging very large: diffuse open grower.

R. facetus, Bailey, Gent. Herb. ii, 449 (1932). Southeastern Connecticut; last year (1933) collected by Jansson in central-western Rhode Island, holding its characters well; about New York City, and in central-southern New York.

Blossoms ordinary in size, in close narrow clusters on short widespreading pedicels, comprising brief lateral straight shoots: primocane leaflets of medium size, only moderately soft-pubescent: upright stiff grower.

R. amnicolus, Blanchard, in Rhodora, viii, 170 (1906); Bailey, Gent. Herb. ii, 447 (1932). Southwestern Maine near coast. Not closely identified with *R. frondosus* although likely to be confused with it. A similar plant I have taken in eastern Massachusetts, the clusters with elongated lower pedicels and lacking central continuing axis; in one collection the plant was 4-5 feet tall and in another 8-10 feet, in both cases the canes bending over nearly to the ground with weight of fruit: I cannot now give it a name.

Even with this family of five, the *frondosus* clan is not defined. *R. heterophyllus* (*recurvans*) has been referred to *frondosus* although very different; *R. multispinus* is not far removed, and others have been confused in the accounting; many places are yet to be collected for Rubus.

RANDII

More than forty years ago the late Edward L. Rand sent me a strange small almost herbaceous blackberry from Mt. Desert Island, on the upper Atlantic coast of Maine, taken in woods on the Southwest Valley Road. I named it *Rubus villosus* var. *Randii*, and it was published in Rand & Redfield's Flora of Mount Desert Island. In those insufficient days only one highbush blackberry was recognized in that region and it was called *villosus*, the plant now known as *allegheniensis*. The smooth highbush, *canadensis*, was not distinguished, the *R. canadensis* of Rand & Redfield being *flagellaris*.

From that day until the present year the Rand plant has been really known only from the type specimen which in 1903 I returned to Rand (keeping a photograph, Fig. 83, Gent. Herb. i) and which is now in the Gray Herbarium, and a co-type specimen in my own herbarium; and these specimens lack primocanes (showing only parcifronds) and are otherwise inadequate. To be sure, the plant has been ascribed to other regions by myself and others, but without sufficient evidence; by Rydberg in 1901 it was raised to specific rank as *R. Randii* and the species ascribed to "Me. to Lake Superior and Va.", and by Bailey independently in 1902 with range "New Brunswick to Lake Superior" and "to be looked for in the mountains of Carolina"; in my paper of March, 1932 (Gent. Herb. ii, 377) I wrote: I have tried to identify specimens from other regions as belonging to *R. Randii* but they lack primocanes and I now prefer to restrict the species to Mt. Desert until complete material is collected from that island and the full character of the plant becomes apparent."

Not until July, 1933, did opportunity arise to collect on Mt. Desert. Southwest Valley Road was found to be a trail in the woods on the eastern lobe of the Island. On that trail *Rubus Randii* was frequent, a weak almost herbaceous and often sterile plant 10 to 30 inches high. It was apparent that the plant is a woods and stature form of some other Rubus, for it had no diagnostic characters of its own.

The problem then at once resolved itself into a determination of the contiguous Rubus flora. Here were found, in the adjacent neighborhood, *Rubus canadensis* and var. *elegantulus*, *R. amicalis*, *R. flavinanus*, *R. allegheniensis*, *R. hispidus*. The *Randii* kind of things I collected represent all the above rubi with the possible exception of *R. amicalis* and that species can scarcely be distinguished from *canadensis* in such undeveloped forms. However, the most abundant and characteristic of these woods forms were clearly to be associated with *R. canadensis*.

Type and co-type specimens of the original *Randii* happen to be small soft sylvan *canadensis*, so that it must be referred to that species as an ecological adaptation. It is much like *R. canadensis* var. *imus*, but that plant is a stiffer firmer and more characteristically a coppice or open-

country form. Therefore, the Rand blackberry may now be returned to its original status as in the Rand & Redfield Flora but with a new combination of names since in the meantime *canadensis* has been distinguished from *villosus:*

† **Rubus canadensis** var. **Randii,** n. tr.

R. villosus var. *Randii*, Bailey, in Rand & Redfield, Fl. Mt. Desert, 94 (1894).

R. argutus var. *Randii*, Bailey, Sketch. Evol. Native Fruits, 385 (1898).

R. Randii, Rydb. in Britt. Man. Fl. North. States and Can. 497 (1901); Bailey, Cyclo. Amer. Hort. 1584 (1902); as to name only.

If var. *Randii* is a woods form of *R. canadensis* then we should expect to find it elsewhere; but such other sylvan states of *canadensis* as I have taken lack the soft semi-herbaceous character of much of the Mt. Desert occurrence; it is evident that other environmental characters than shade are required to produce the extreme form seen on the Island.

Question naturally arises whether ecological adaptations should be accorded varietal names in nomenclature. Probably not; but in view of the marked character of the *Randii* plant, its apparent ability to perpetuate itself, and particularly because of the long taxonomic record, I now account for the name by perpetuating it in what I think to be its true relationship.

Jeckylanus

Writing in December, 1932 (Gent. Herb. ii, 461) I reported the finding of *Rubus arundelanus* of Blanchard at one of his cited stations and was able to redefine this dubious species and to place it (p. 466) in the Procumbentes. Another of the Blanchard puzzles, recorded by him with canes resembling those of *arundelanus*, has been the apparently related *R. Jeckylanus* and I wrote of it: "Type stations of *Jeckylanus* are two, also in Kennebunkport; recorded by Blanchard also as 'frequent throughout the village'. The first station is 'near Arundel railroad station' (now discontinued). At that place I found two Rubi but not *Jeckylanus*. I have no disposition to make of the plant until I see it in the field, although my specimens from Blanchard are 35 mounted sheets and also some loose material". I also gave reasons for accepting the Blanchard spelling of the name.

To Rydberg in North American Flora *R. Jeckylanus* is synonymous with *R. recurvans* (*heterophyllus*), a disposition I followed until latterly. To Brainerd in Blackberries of New England (Vt. Bull. 217) it is *R. argutus* × *frondosus*. It is accorded independent standing in the seventh edition of Gray's Manual, and omitted from Britton and Brown's Illustrated Flora. To Rydberg and the Gray *R. arundelanus* is synonym of *recurvans*, to Brainerd it is *frondosus*, and it is absent from Britton and Brown.

In Kennebunkport, Maine, Blanchard mentions (Rhodora, viii, 178) three particular stations,—Arundel railroad station, Grand View Hill west of the Casino, both of which I had previously searched in vain, and "along the shore from Spouting Rock to Cape Arundel"; this last locality I visited in 1933 and found only *R. recurvicaulis* in the way of a running or prostrate blackberry. Blanchard adds, "also at the Granite Quarry in Biddeford".

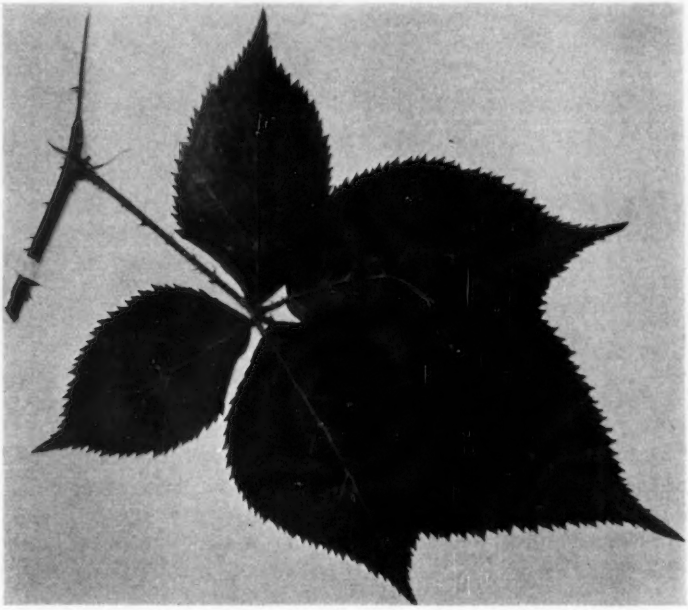

FIG. 138. PRIMOCANE LEAF of *Rubus Jeckylanus* (× ⅓), showing the crowding of the very broad upper leaflets which are soft-pubescent underneath.

This year I visited Biddeford in York County, Maine, for the purpose of recovering *Jeckylanus*. I found that there are many old granite quarries at Biddeford and Blanchard gave no clue as to which one. The first attempt was an idle quarry south of the city, and there in small compass in rain at nightfall I met an astonishing company of blackberries: *plicatifolius* and *glandicaulis* not reported by Blanchard from Biddeford although the former he records at North Berwick, *Enslenii* * and *permixtus* and *rhodinsulanus*, the two latter apparently first records in Maine, and *Jeckylanus*.

* I have given due warning that the northern plant we know as *R. Enslenii* may require a new disposition as to name, the last time in Gent. Herb. iii, 134. This northern plant I now have as far west as central and western Missouri.

Sight of *R. Jeckylanus* in nature disclosed at once its difference from *arundelanus* and convinced me that it is a dependable species; and herbarium specimens confirm the estimate. In both species the leaves are soft-pubescent underneath. The two may be contrasted:

Arundelanus: Plant essentially procumbent or even trailing although growing primocanes may be ascending or oblique to 2 or 3 feet and afterwards become grounders, primocane ends of the runner kind, then freely tip-rooting: primocane leaves small, the terminal leaflet rather abruptly pointed and not commonly much exceeding 2 or 2½ inches in length, the two lateral pairs much smaller, margins very closely and sharply serrate: floricanes on the ground or on rocks, long and slender, bearing many broad-short small incised leaflets: flowers 4-8 mostly in definite short-pedicelled cyme-like clusters terminating laterals 2-5 inches long and subtended by small acuminate leaflets.—Southwestern Maine and eastern Massachusetts.

Jeckylanus: Plant semi-erect or bushy, 1½-2 feet high (2-4 feet according to Blanchard), primocanes recurving and more or less tip-rooting ("often tipping", Blanchard), at flowering and early fruiting season not conspicuously grounding: primocane leaves ample because of the large size of one or both pairs of lateral leaflets, terminal one often exceeding 3 inches long, all gradually acuminate and margins coarsely and not unusually sharply serrate (Fig. 138): flowers variously borne but mostly not in definite small clusters, many of them long-pedicelled from axils, on flowering shoots often elongated and leafy even to 12 or more inches.—Recognized only in southwestern Maine.

Blanchard was perplexed by the varied and indefinite flower-bearing of *Jeckylanus:* he mentioned "three forms and others", and adds "the old ones [canes] are unique in their polymorphous and mixed characteristics". This characteristic may have suggested the name Blanchard adopted for the species: Brainerd states (Bull. 217, Vt. Agr. Exp. Sta. 55 note) that the plant was "named after a fictitious person who lived a double life in a well-known story of Stevenson".

Rubus Jeckylanus may be entered in the Procumbentes and perhaps keyed against *R. recurvicaulis* with leaves soft-pubescent underneath and flower-clusters of indefinite formation.

Invisus

Three vagaries of fate have pursued *Rubus invisus:* identification has been wholly misunderstood; nomenclature has been bewildered; the plant appeared to have vanished from the earth. If such confusions can arise within the time of persons now living, we need not wonder that many of the old names and diagnoses are in doubt.

It is not necessary to trace the history of *invisus* for it is sufficiently recorded elsewhere, as in Gentes Herbarium ii, 329-330; also figs. 108, 109, vol. i. It was described first by me in 1891 as *Rubus canadensis* var. *invisus*, the *canadensis* of that dim day being *R. flagellaris.* It grew rather abundantly on one bank of Cascadilla gorge on the border of the campus of

Cornell University at Ithaca. Extensive alterations in terrain destroyed the station and for many years the plant has been known only from the collections of forty years and more ago. Repeated explorations in Cascadilla gorge in 1932 revealed one sterile remnant growing in shale rock (Gent. Herb. ii, 461). This plant was given a chance by the removal of other growth, and staked out and covered for the winter. Last year it blossomed. Last year also another small stand of the plant was discovered a mile or two away on low flat land.

Probably *Rubus invisus* has a wider range. A new picture (Fig. 139) is now presented in the hope that persons who may be unexpectedly interested in Rubus may keep their eyes open for it. Perhaps it has been passed

Fig. 139. Flowering shoot of *Rubus invisus*, nearly natural size; pedicels and young axes and frequently the petioles bear stalked glands.

over as only *R. flagellaris*, but marks of separation are good. At a considerable distance a trained eye would detect it. I have not seen it growing with or near *flagellaris*.

The nomenclatorial pedigree is as follows:

Rubus invisus, Britton, in Bull. Torr. Bot. Club, xx, 279 (1893), as to combination only; Bailey, Sketch Evol. Native Fruits, 374 (1898), as to plant.

R. canadensis var. *invisus*, Bailey, in Amer. Gard. xii, 83 (1891).

R. Baileyanus × *flagellaris*, Brainerd, in Bull. 217, Vt. Agr. Exp. Sta. 79 (1920).

R. flagellaris var. *invisus*, Bailey, Gent. Herb. i, 161 (1923).

Laudatus

The late Alwin Berger, when connected with the New York State Agricultural Experiment Station at Geneva, founded *Rubus laudatus* (Rept. 1925, ii, 79), "yet insufficiently known, but represented in cultivation by such varieties as Bundy, type of the species, which originated in Missouri, and probably Early Harvest". He did not know the plant in the wild. The Bundy pomological blackberry I have in good representation in the herbarium from plants grown at Geneva in Dr. Berger's time, some of it from him. It has rather striking characters; but not knowing how much of its peculiarities might be due to cultivation and without trans-Mississippian material against which to check it, I have referred the plant to *R. ostryifolius*, along with other doubts and nondescripts, "leaving segregation until we have established a basis of judgment" (Gent. Herb. ii, 393). Various species will be rescued from the *ostryifolius* synonymy as we begin to understand them; *laudatus* is the first. (Full resolution of *ostryifolius-Andrewsianus*, as well as of *allegheniensis*, must await a later bolder day and perhaps another hand).

Occasion for the present discussion is receipt of ample specimens of what is apparently the native form of *R. laudatus* collected by B. F. Bush in southwestern Missouri and eastern Kansas. The Bundy blackberry is recorded as having originated in Piedmont, Missouri, which is in Wayne County in the southeastern part of the state, by T. B. Bundy in 1905. Hedrick reports it as "too tender to cold to be of much value" at Geneva, which apparently confirms its more southern origin.

Recently in the Rubus collections of the University of Missouri sent me for examination I find *R. laudatus* from the central part of the state (Columbia, Boone County, *Drouet* 413, *Rickett* 362); this indicates a wide distribution of the species and suggests that western collectors be on the lookout for it elsewhere. One must have complete specimens, with primocanes and floricanes, for identification.

The particular botanical marks of *R. laudatus*, which is one of the Arguti, are the very open flower-clusters on leafy laterals, with long ascending pedicels and some of them in the lower axils, large flowers with oblong well-separated petals (Fig. 140), prominent simple leaves in the inflorescence, many of the floral leaflets narrow and deeply toothed, narrow primocane leaflets (Fig. 141); the plant is vigorous and upright, canes furrowed and only moderately straight-prickly, leaves dull, soft-pubescent underneath and thinly pubescent above when young. In the cultivated form, Bundy,

FIG. 140. FLOWERING HABIT of *Rubus laudatus* (× 5/8) as represented in Bundy blackberry; from an herbarium specimen.

the floral shoots are longer and therefore more leafy than in the wild plant but this kind of difference one would expect in those circumstances. Berger does not describe the flower-cluster. Bush found the wild *laudatus* growing on rich wooded hills, high wooded hills, and in old fields. Whether this plant will continue to be regarded as specifically distinct when further evidence is assembled will of course not be known by me, but I cannot now bring myself to unite it with the eastern range of the *ostryifolius* group.

It is recorded that Bundy blackberry is "supposed to be a seedling of Early Harvest" (Hedrick), and of that variety the original plant "was found growing wild in Illinois sometime previous to 1880". We have noted Berger's statement that his *laudatus* comprises "probably Early Harvest." My covers disclose two markedly different sets of plants under the name Early Harvest. Sheets from Geneva by Berger are much like those of

Bundy, with flower-clusters more condensed like those in the wild plant, and floral leaves jagged-edged. I think this Early Harvest is the same botanical species as Bundy, but Early Harvest I have from elsewhere must be different. It is not unusual to find pomological varieties misnamed.

Berger states under *laudatus* that "here belongs also the variety Kenoyer which is a hybrid with Kittatinny." It is recorded that Kenoyer was "a

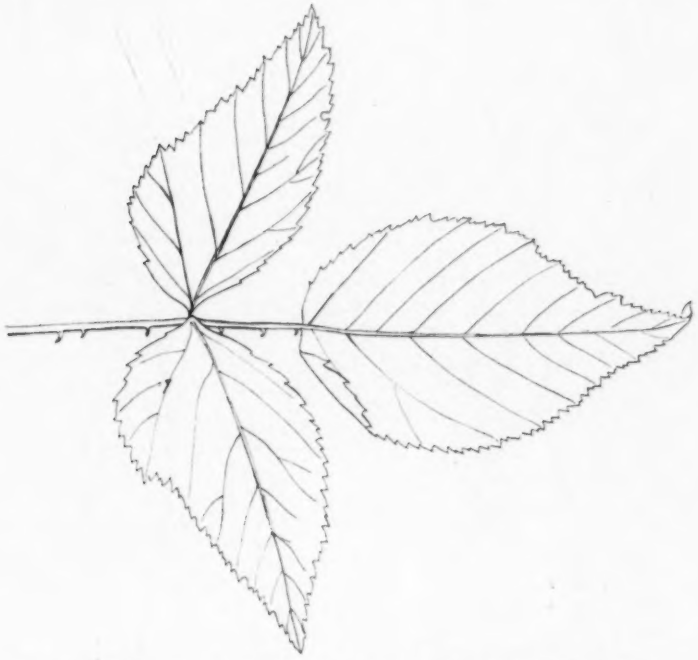

FIG. 141. PRIMOCANE LEAF OF BUNDY BLACKBERRY, which is *Rubus laudatus* (× ¾). Primocane leaflets may be 5.

chance seedling discovered in 1897 by F. L. Kenoyer, Independence, Kansas, by whom it was introduced in 1902. It is supposed to be a cross between Early Harvest and Kittatinny which were growing nearby." This is doubtful indication of hybridity. Sheets of Kenoyer that I have from Berger bear strong resemblance of *laudatus*.

The sum of the matter is that we have before us wild material from Missouri and Kansas, and three pomological varieties originating in Illinois, Missouri and Kansas, all of which assemble themselves into what appears to be a definable natural species of western range.

This blackberry, *laudatus*, or a very similar one, occurs also in southwestern Indiana, *C. C. Deam:* Posey County, 42,943, in open woods five miles south of Caborn, in hard clay soil, canes 5-10 feet long and bending over; Knox County, 42,868, crest of a wooded sandy ridge on the Claypole Hills about five miles east of Mt. Carmel, canes 4-6 feet long with arching tips. These plants differ somewhat from the Missouri material but no

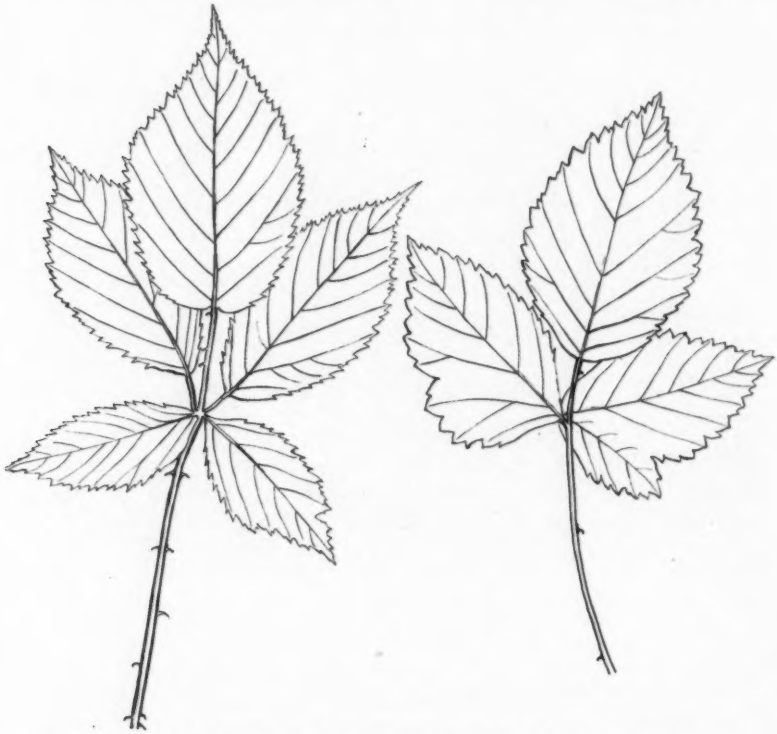

FIG. 142. PRIMOCANE LEAF of *Rubus par*, left, and of *R. impar*, right (× ⅔).

more than many species vary among themselves, and for the present at least I must keep them with *R. laudatus*.

Another southwestern Indiana blackberry is so different that it should have a name. It is not a very prickly plant and the canes are scarcely furrowed; primocane leaflets often 3 and not large or long-pointed as in *laudatus*, flowers cup-shaped and with very broad petals. It has many of the features of the recently recognized eastern *Rubus par* (Gent. Herb. iii, 144) but that species bears 5 large long-acuminate sharp-serrate leaflets on

primocane leaves and narrow-acute floral leaflets (note Fig. 96). The Indiana plant may be called

† **Rubus impar,** spec. nov. § Arguti. Figs. 142, 143.

Erectus, eglandulosus, leviter pubescens, aculeis paucis, parvis et sparsis: primocani teretes, 1-1½ poll. alti, foliola 3 vel 5, ovata, obtuse dentata: foliola floralia parva, obovata vel cuneato-obovata, obtusa, in dimidia parte superiore serrata: flores 2-4, in gracilibus pedicellis ascendentibus, petala latissima, calycis lobi erecti.

FIG. 143. FLOWERING SHOOT of *Rubus impar* (× 1). Sometimes four or five flowers occupy a shoot.

Medium-sized upright glandless and light-pubescent plant with terete slender primocanes erect and 3-5 feet long, floricanes bending over, prickles few, small and scattered, foliage light colored: primocane leaves not large, on long petioles that bear a few prickles; leaflets 3, or if 5 then the lowest pair very small, terminal one very short-stalked and others practically sessile; blades ovate and not cordate and gradually short-pointed, largest to 3½ inches long and more than half as broad, margins coarsely and rather bluntly serrate, sparsely appressed-hairy above and thinly soft-pubescent underneath: floricanes mostly naked below, unbranched except for the lateral leafy floral shoots which are 2-4 inches long and bear 2-4 showy rose-like flowers less than 1 inch across on slender lightly pubescent nearly or quite unarmed ascending pedicels; floral leaflets 3, obovate to cuneate-obovate, 1½ inches or less long, blunt or with a very short abrupt apex, toothed on the upper part, thinly pubescent underneath: petals broad, making a deep flower; calyx-lobes narrow and pointed, essentially erect in anthesis.

Posey County, southwestern Indiana, *Deam* 42,936, in hard clay in post oak flats, in an area of very poor soil and which usually overflows every year or two.

These various Indiana blackberries I once thought might be *R. rhodophyllus*, but recent field studies of that species in the South (Gent. Herb. iii, 124, 146) have shown such disposition to be untenable.

TENNESSEE

Gattinger knew seven blackberries in Tennessee. That was in 1901 in the Flora of Tennessee and a Philosophy of Botany, one of the most interesting of the State floras. What his Rubus names mean will probably not now be known. Certainly the state is richer than seven in blackberries, and

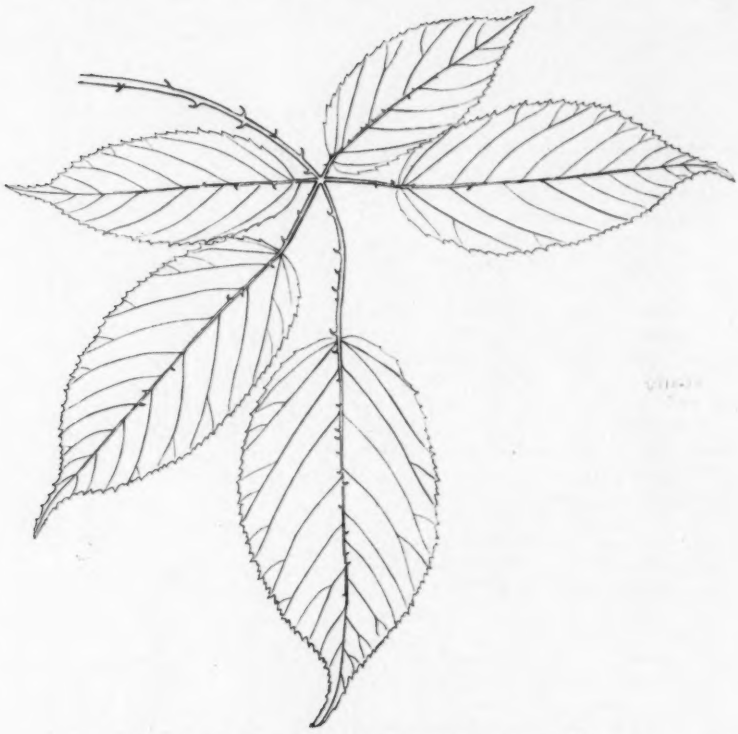

FIG. 144. PRIMOCANE LEAF of *Rubus tennesseanus* (× ⅓).

it lies between the floras of the North and the South. I now add one to the number:

† **Rubus tennesseanus,** spec. nov. § Alleghenienses. Fig. 144.

A *R. allegheniensi* foliis glabris tenuibusque; a *R. canadensi* inflorescentia breviori et glandulosa; ab utrisque brevibus acutisque uncis in petiolis et costis differt.

Tall slender thin-leaved highbush blackberry with glabrous primocane foliage and arresting hooked barbs on petioles, petiolules and midribs, inflorescence short-racemose and glandular: primocanes thin, angled or furrowed, erect-arching, 4-8 feet long or high, glabrous except perhaps at tip,

soon slender-branched, bearing widely spaced or scattered flat-based straight thin prickles to 3/8 inch long; leaves of primocanes large and bright green, of 3 or 5 big leaflets of which the terminal one is long-stalked (petiolule sometimes 2 inches) and the lateral ones successively shorter-stalked, terminal leaflet long-ovate to ovate-oblong and to 6 inches long and one-half as broad and more or less subcordate, laterals narrower, all of them long-acuminate or almost caudate, thin, rather coarsely unequally serrate-dentate, glabrous and smooth on both surfaces or perhaps with slight tufts of pubescence at intervals underneath, the ribs underneath bearing a line of small sharp hooks; leaflets toward end of primocane likely to be much narrower: parcifrond leaves thinly pubescent underneath at least on veins and thereby dull gray, leaflets 3 and oblong and short-acuminate, petioles and petiolules and perhaps midrib bearing sharp hooks: flower-clusters short-racemose with separate pedicels in lower axils, flowers 5 or more on divaricate or ascending gland-bearing pedicels about 1 inch long; prominent floral bracts gland-bearing; calyx-lobes long and pointed, gland-bearing.

Rich Mountain, Sevier County, eastern Tennessee, 2,000 feet altitude, in partial shade, *L. H. B.* 1933. This species might be placed with the Canadenses were it not for the gland-bearing floral parts. Upper primocane foliage strongly suggests *R. canadensis*. The plant might be assumed to be a hybrid between *R. allegheniensis* and *R. canadensis* although we do not know that these species cross in nature and the assumption would not account for the peculiar foliar armature which does not pertain to either of those species. I know an ample area where *allegheniensis* and *canadensis* grow together but I have not found intermediates there or evidences of hybridity (Gent. Herb. ii, 373).